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## Reflexive Control: Influencing Strategic Behavior

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# Reflexive Control: Influencing Strategic Behavior

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**ABSTRACT:** Reflexive control aims to change the other's perceptions about their utility sets. It contains underlying elements that could help give structure to analyses of strategic behavior by using a nonlinear approach that aims to improve the quality of assessments. This article is an exploratory literature study into the interpretations of the concept of reflexive control, how elements of reflexive control link to the more widely accepted body of knowledge, and how these elements could be valuable additions to the current work on the analysis of strategic behavior.

**Keywords:** reflexive control, strategic behavior, strategic analysis, nonlinearity, complex adaptive system

**R**eflexive control's conceptual development began in 1967 with Soviet mathematical psychologist Vladimir Lefebvre. Western literature defines reflexive control as "a means of conveying to a partner or an opponent specially prepared information to incline him to voluntarily make the predetermined decision desired by the initiator of the action."<sup>1</sup> In the years since it was first developed, reflexive control has gained a somewhat mythical status in international relations and military science, with many Western publications on the topic often focusing on whether the Russian government uses reflexive control. There have also been various descriptions and commentaries on the theory within international-relations and security studies over the years. Since the 1980s, contributions in the West have for example been made by Diane Chotikul, Clifford Reid, Timothy Thomas, Keir Giles, James Sherr, and Anthony Seaboyer.<sup>2</sup> Of particular note for those interested

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1. Vladimir A. Lefebvre, *The Algebra of Conscience: A Comparative Analysis of Western and Soviet Ethical Systems*, Theory and Decision Library, vol. 26 (Dordrecht, NL: D. Reidel Publishing Company, 1982); and Timothy L. Thomas, "Russia's Reflexive Control Theory and the Military," *Journal of Slavic Military Studies* 17, no. 2 (2004): 237–56, <https://www.tandfonline.com/doi/pdf/10.1080/13518040490450529>.

2. For example, see Diane Chotikul, *The Soviet Theory of Reflexive Control in Historical and Psychocultural Perspective: A Preliminary Study* (Monterey, CA: Naval Postgraduate School Monterey, July 1986), <https://apps.dtic.mil/sti/pdfs/ADA170613.pdf>; Clifford Reid, "Reflexive Control in Soviet Military Planning," in *Soviet Strategic Deception*, ed. Brian D. Dailey and Patrick J. Parker (Lexington, MA: Lexington Books, 1987), 295–308; Timothy L. Thomas, *Russian Military Thought: Concepts and Elements* (McLean, VA: MITRE Corporation, August 2019), <https://www.mitre.org/sites/default/files/2021-11/prs-19-1004-russian-military-thought-concepts-elements.pdf>; and Keir Giles, James Sherr, and Anthony Seaboyer, *Russian Reflexive Control* (Kingston, ON: Royal Military College of Canada, October 2018).

in the theory's history is Antti Vasara's comprehensive and impressive literature study, the *Theory of Reflexive Control*.<sup>3</sup>

There are indications that Russia has used reflexive control and that it has a place in Russian military doctrine. Han Bouwmeester states that it falls under the umbrella of *maskirovka* (маскировка), alongside active measures and *dezinformatsiya* (дезинформация), but that is not the same as whether they can pull it off in practice.<sup>4</sup> Indeed, there is evidence that reflexive control has been studied in Russia, with notable contributions from F. Chausov, Valery Makhnin, D. Kontorov, and V. Druzhinin.<sup>5</sup> For a short while, there was a journal devoted to the topic, with contributions from both the East and the West.

Thus far, the West has not given much attention to the complex adaptive systems (CAS) background from which reflexive control emerged, nor has much research been devoted to the practical modeling of reflexive control. There is a largely unexplored opportunity to learn from the concept of reflexive control and perhaps to incorporate some of its elements into our approaches to strategic problems.

The concept's value does not necessarily or exclusively lie in influencing others: reflexive control and deception have arguably the same effects. What is different is the reflexive process of analysis precedes any action or outcome. Reflexive control—especially the thought process behind reflexive control—can help us understand other actors and their behaviors while also illuminating elements around our own vulnerabilities. If we successfully employ such a structure, we could improve our resilience against actors trying to influence our decision making. Learning from reflexive control could also improve our thinking about risk, deterrence, and military strategy by offering structural or framework foundations to help analyze strategic behavior.

After a brief discussion of the meaning of reflexive control, I will highlight my interpretations of three core aspects of the concept: the complex adaptive systems perspective, the reflexive process, and the “model” of the self. I will remove some of the mystique around the concept, move it beyond some

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3. Antti Vasara, *Theory of Reflexive Control: Origins, Evolution and Application in the Framework of Contemporary Russian Military Strategy* (Helsinki, FI: National Defence University, 2020).

4. Thomas, *Russian Military Thought*; Giles, Sherr, and Seaboyer, *Russian Reflexive Control*; and Albert Johan Hendrik Bouwmeester, “Крым Nash’: An Analysis of Modern Russian Deception Warfare” (PhD diss., Utrecht University, 2020), 39–40, <https://dspace.library.uu.nl/bitstream/handle/1874/400504/proefschrift%20krym%20nash%20ajh%20bouwmeester%20-%205fbed1b309bc9.pdf>.

5. For example, see F. Chausov, “Osnoviy Reflexivnogo Upravlenija Protivnikom (Основы рефлексивного управления противником),” *Morskoi Sbornik*, no. 1 (1999); V. L. Makhnin, “Reflexive Processes in Military Art: The Historico-Gnoseological Aspect,” *Military Thought*, no. 1 (2013): 44, <http://pstmprint.ru/wp-content/uploads/2016/11/INFW-3-2012-6.pdf>; and V. Druzhinin and D. Kontorov, *Voprosi VoЕННОI Sistematiki* (Вопросы военной системотехники) (Moscow: Voennoe Izdatelstvo, 1978).

of the previous interpretations, and make it accessible to a larger audience by approaching the concept from a practical perspective. This approach is taken with the aim to begin exploring how the elements of reflexive control link to and synthesize more widely accepted work in military strategy, deterrence, international relations, and behavioral psychology and how they could be valuable additions to the existing work on the analysis of strategic behavior.

## The Meaning of Reflexive Control

Reflexive control is an epistemological process that seeks to understand not only how one principal party or agent sees the other, but also how the other agent sees the principal party and believes the principal party perceives them, such that information can be introduced into the other and prompt behavior that will give the principal party a competitive advantage.

Reflexivity means there is no such thing as an independent variable: everything happens in a complex adaptive system (CAS) and everything in that system influences everything else.<sup>6</sup> A complex adaptive system is a nonlinear system in which a network—or system—of connected parts, often referred to as agents, interacts and adapts to succeed. A complex adaptive system is a nonlinear network of connected parts, often referred to as agents, that interact and adapt to survive and succeed. It is also an open system, which means external stimuli can interact with and become part of the system. The self-organizing adaptive nature of a complex adaptive system and the absence of a dependent variable make it hard to control and relatively unpredictable. Ecosystems, social groups, and indeed wars can, and should, be described as complex adaptive systems. Complex adaptive systems differ from a closed system, which could be compared to a circuit that behaves predictably.

The nonlinear foundations of reflexive control contradict the idea that control is possible. When Lefebvre began developing reflexive control as a concept, he referred to it as *reflexivnoe upravlenie* (рефлексивное управление). Vasara points out that the word *upravlenie* has no full English equivalent and could mean control, management, administration, or the concept of command and control.<sup>7</sup> For most reflexive control research in English, “control” is chosen as the translation of *upravlenie*. It is important to acknowledge, however—for the acceptance of the definition and interpretation of reflexive control I will use throughout this paper—that “control” is not the full translation.

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6. For example, see George Soros, *Alchemy of Finance: Reading the Mind of the Market* (Hoboken, NJ: J. Wiley, 2003).

7. Vasara, *Theory of Reflexive Control*, 8.

The nonlinear foundations of reflexive control also mean it is highly unlikely that it can meaningfully be reduced to a solvable equation.<sup>8</sup> The simplification to an equation would require removing too much important contextual information, which is central to the underlying concept upon which reflexive control relies.<sup>9</sup>

Lefebvre based reflexive control on reflexive game theory, a Soviet-specific form of game theory that he initiated.<sup>10</sup> By nature, reflexive games do not have an equilibrium and are based on considerations of the other party's decisions—and the mechanisms behind those choices—of the other.<sup>11</sup> Reflexive games add a more significant element of psychology to game theory—and to rational choice theory—as we most commonly know it in the West.

Taking into account the importance of the concept of reflexivity in reflexive control, it would be more productive to view reflexive control as an art and a practical matter rather than as a science, as would be the case for the wider topic of military strategy.<sup>12</sup> In reflexive control—like in military strategy—there are no certainties or “laws,” and the focus should not be on getting everything exactly right, as the probability of succeeding would be close to zero. It is more effective to improve understanding and thereby build a “good enough” strategy.<sup>13</sup> Equations could in some situations help make sense of data and thereby play a part in building understanding, but they should not be considered to paint the complete picture.

For practical purposes, it could be useful to see reflexive control as a nonlinear and CAS approach to the interaction between perception, influence, and behavior, with reflexive control at its core and the aim of changing the other's perceptions about their utility sets at its core: making (influence) the other misperceive what options they have (perception) and what their best choices are (behavior).

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8. Antulio J. Echevarria II, “The Problem of Stability: Military Strategy in a Non-Newtonian Universe,” *Military Strategy Magazine* 7, no. 1 (Spring 2020): 12–16, <https://www.militarystrategymagazine.com/article/the-problem-of-stability-military-strategy-in-a-non-newtonian-universe/>.

9. Antulio J. Echevarria II, “On Schelling and the Fallacy of Positive Doctrines,” *Infinity Journal* 6, no. 2 (Summer 2018): 10–14, <https://www.militarystrategymagazine.com/article/on-schelling-and-the-fallacy-of-positive-doctrines/>.

10. For example, see Vladimir A. Lefebvre, *Lectures on the Reflexive Games Theory* (Los Angeles: Leaf and Oaks Publishers, 2010).

11. Andrew Schumann, “Reflexive Games in Management,” *Studia Humana* 7, no. 1 (March 2018): 44–52, <https://doi.org/10.2478/sh-2018-0004>.

12. Colin S. Gray, “Why Strategy Is Different,” *Infinity Journal* 6, no. 4 (Summer 2019): 4–8, <https://www.militarystrategymagazine.com/article/why-strategy-is-different/>.

13. Colin S. Gray, “Strategy: Some Notes for a User's Guide,” *Infinity Journal* 2, no. 2 (Spring 2012): 4–9, <https://www.militarystrategymagazine.com/article/strategy-some-notes-for-a-users-guide/>.

## Reflexive Control: A Systems Approach

The application of reflexive control in theory consists of three steps that need to be taken by the “controlling party,” the principal agent, before the “controlled party,” the other agent, makes a decision. These three steps are followed by a feedback loop:<sup>14</sup>

1. Building an understanding of the perception of the situation: what does the other agent think the situation looks like?
2. Determining what the other agent’s goals are and what they should be to meet the principal agent’s needs: what does the other agent perceive to be their best choices and what would they need to be?
3. The principal agent introduces a solution “algorithm” that analyzes possible scenarios of interactions and how to influence them.
4. A feedback loop occurs to understand what decision the other has made and why.

The literature on reflexive control theory makes clear that any “model” should include data on both agents to capture the reflexive nature of the action and reaction between the “controlling” principal agent and “controlled” other agent. The first three steps are part of reflexive control’s model of the self, with the feedback loop feeding into the model to help improve it.

The abovementioned steps may resonate somewhat with the tactical-level Intelligence Preparation of the Battlefield (IPB) and Decision Point Tactics (DPT) analyses. A more applicable comparison could be made, however, with John Boyd’s OODA (Observe, Orient, Decide, Act) loop. Both Boyd’s work and reflexive control find their origins in cybernetics, one of the scientific fields later integrated into general systems theory.<sup>15</sup>

Although the OODA loop is known for increasing decision-making speed at the tactical level, its utility extends to decision making at multiple levels. Reflexive control can also be used on multiple levels. In 1984, Lefebvre made a distinction between “constructive” and “destructive” categories of reflexive control.<sup>16</sup> Makhnin in 2013 used the term “creative” rather than “constructive,” but both authors describe this category as reflexive actions that can be used in slow-paced situations—including on grand- and

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14. Bouwmeester, “*Krym Nash*,” 39–40.

15. Frans P. B. Osinga, *Science, Strategy and War: The Strategic Theory of John Boyd* (London: Routledge, 2007), 72.

16. Vladimir Lefebvre and Victorina D. Lefebvre, *Reflexive Control: The Soviet Concept of Influencing on an Adversary’s Decision Making Process* (Englewood, CO: Science Applications, 1984), 144–45; and Chotikul, *Reflexive Control*, 81.

military-strategic levels—where there is time for a “controlling” principal agent to conduct an in-depth analysis of the situation and the goals of the “controlled” other agent.<sup>17</sup> Constructive reflexive control is different from destructive reflexive control, which can be used in fast-paced, mainly tactical, situations.

The same four steps would form both constructive and destructive reflexive control processes, but the time frame to draw conclusions and the depth of analysis would vary between the two categories. This would be the same for either a rapid or more slow-paced OODA loop. An important difference between reflexive control and Boyd’s OODA loop is of course the focus.

Boyd focuses on impairing the opponent’s capability to adapt, whereas reflexive control focuses specifically on altering other other’s perceptions during the “Observe” and “Orient” (OO) stages in a decision-making process, thereby steering the other’s decision and actions (DA). In both the OODA loop and reflexive control, the aim is to influence the other actor’s decision making. For the former, a principal agent would attempt to limit the feedback mechanism, impair adaptability, and remove the adversary’s opportunities through closing the adversary’s “open” system. For the latter, however, there is a variety of ways through which a principal agent could influence or manage the other agent’s decision making.

Reflexive control could thus be used as a layer on top of the OODA loop. It could be used offensively to observe how we can alter the perception of OO and influence or alter DA. It could also be used defensively to assess whether there are any reflexive control “traps” (or genuine misunderstandings) that alter our perception of the situation and could thus be influencing how we behave.

Boyd is not the only one to apply a CAS or nonlinear approach to international relations and war studies, though in these fields, the OODA loop is probably the most widely recognized example of the approach. Others who incorporated a nonlinear approach include Robert Jervis, Colin S. Gray, and indeed Carl von Clausewitz.<sup>18</sup> Gray states:

[The OODA loop] is revered by many as summarizing the wisdom of the ages on how to win. The core notion is that success rewards the warrior who can operate within the decision cycle of the enemy. It is a sound idea, but as the philosopher’s stone for victory at all levels of warfare it is distinctly sub-Clausewitzian.<sup>19</sup>

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17. Makhnin, “Reflexive,” 44; and Vasara, *Theory of Reflexive Control*, 38.

18. Echevarria, “Problem of Stability,” 12–16.

19. Colin S. Gray, *Another Bloody Century: Future Warfare* (London: Phoenix, 2006), 192.

It is indeed never as simple as following four steps for guaranteed victory, and the comparison with linking reflexive control to the OODA loop is not meant to give that impression. Rather, the comparison shows how reflexive control could fit within or alongside the OODA loop's more familiar context.

The four steps of reflexive control provide the starting point for a framework that could help with analyzing strategic behavior in a way that incorporates a CAS approach. The next two sections focus on the reflexive process and the model of the self, which are two key underlying concepts that need to be understood better and explored further to continue to build the foundation for such a framework. These two concepts are what makes reflexive control a valuable concept to explore further in the context of the analysis of strategic behavior.

## The Reflexive Process

Reflexive control literature indicates that any reflexive control operation should have a reflexive element to "forecast" the other agent's thought and behavior.<sup>20</sup> Such forecasting should include an assessment of the level of reflexivity the other actor expects, though Schumann notes that it is impossible to be certain about the level of reflexivity the other will use.<sup>21</sup> Thomas Schelling, for similar reasons, assumes an infinite level of reflexivity (in the sense of "I think that you think that I think," etc.) in forecasting thought and behavior, which, in his opinion, makes it unhelpful to use the level of reflexivity as a variable.<sup>22</sup>

The better question to ask might be whether it is likely that the other is thinking about the principal agent's perception of the situation or not, which will help to determine whether reflexivity is a factor for the other. In nuclear deterrence, and active combat situations, this thought process is vital and can therefore be assumed to have taken place. Yet, this same assumption cannot always be made in situations where the other might not (yet) realize they are in a competitive or hostile situation.

If the other agent plans for a competitive situation while the principal agent thinks they are in a cooperative situation, the other agent has a significant advantage over the principal agent if it wants to influence the principal agent's decision making. This advantage arises because the principal agent in that case is not likely to have its guard up and is not necessarily reflexively

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20. For example, see Vasara, *Theory of Reflexive Control*, 51–61.

21. Schumann, "Reflexive Games," 44–52.

22. For example, in tacit games, see Thomas C. Schelling, "Bargaining, Communication, and Limited War," in *The Strategy of Conflict*, rev. ed. (Cambridge, MA: Harvard University Press, 1980).



thinking about the other agent. Arguably, the risk of not having one's guard up is larger in grand strategy than in military strategy, but it is nonetheless relevant in either context.

More important is the question of whether the analysis of the reflexivity is correct—whether the principal agent has a correct image of the other agent, and vice versa. In reflexive control, such an image would be the model of the self, of which the question about reflexivity is one element alongside other elements, as outlined in the next section.

### The Models of the Self and the Other

In reflexive control, any probability of success relies on correctly modeling and interpreting the perceptual worlds of the other versus the principal agent's own perception. Although the literature only mentions a model of the self, it is helpful to think about this model as both the model of the self and the other.<sup>23</sup> This model can be imagined as a subjective net assessment of a relationship between two actors, including how they perceive each other and the situation, how they are likely to interact or could interact, and how their interaction could be changed to influence the outcome. In this subjective net assessment, it is important to try to “think about the unthinkable”—the importance of which Herman Kahn also stressed. For example, if the principal agent's ethical system is different from the other agent's, the principal agent might not have a clear idea yet about how far the other is willing to go or what its perceived utility sets are like.<sup>24</sup>

A key underlying idea to the concept of reflexive control and the model of the self and the other is the recognition that, though an objective reality exists, it is unlikely that people's perceptions correspond with this reality.<sup>25</sup> Therefore, it is unlikely that anyone bases decision making on objective reality. Rather, decisions are thought to be made on the basis of a perceived version of reality. Daniel Kahneman calls this concept “bounded rationality,” which he describes as “different maps of the same landscape,” whereas Robert Jervis

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23. Lefebvre, *Algebra of Conscience*.

24. Herman Kahn, *Thinking about the Unthinkable* (New York: Horizon Press, 1962).

25. Chotikul, *Soviet Theory of Reflexive Control*, 29.

uses “perceptual worlds” and generally refers to descriptions of the concept throughout his work.<sup>26</sup>

In this perceptual world, subjective factors such as ethical systems, long- and short-term goals, time lines available to make decisions and act, biases, noise, and weak spots all influence actors’ decisions. The above implies that a subjective utility set, based on the actors’ perception of a situation, including subjective probabilities—rather than an objective utility set based on an objective truth and taking into account “objective” probabilities—would be a better way to analyze behavior and potential future interactions.

Bounded rationality and subjective utility do not imply that people necessarily behave unpredictably, though of course they may. Rather, people’s perceptions of their own utility sets—what they see as their best options—do not necessarily correspond with what external actors would see as their best options. Schelling also recognized that different actors require a different “rationality” to be deterred. He maintains, however, that it is impossible to have certainty about what the other’s value sets are.<sup>27</sup>

This model of the self and the other consists of the first three steps of the reflexive control process. Ethical systems, long- and short-term goals, perceptions of each other, reflexivity, biases, noise, time lines for decision making, and weak spots are all elements of what a subjective utility set could be. Additionally, these elements, and thus the subjective utility set, should be thought about for both parties in the model of the self and the other. Thinking about a model of the self and the other—including the introduction of subjective utility sets—means there is an explicit necessity not only to think about the other, but also to think critically about the self, which provides an explicit opportunity to illuminate potential vulnerabilities.

Various authors have worked on measuring and analyzing some of the individual abovementioned factors, but they have not yet been combined into one framework for strategic analysis.<sup>28</sup> Such a framework

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26. Daniel Kahneman, “Maps of Bounded Rationality: Psychology for Behavioral Economics,” *American Economic Review* 93, no. 5 (December 2003): 1449–75, DOI: 10.1257/000282803322655392; and Robert Jervis, “How Statesmen Think: The Psychology of International Politics,” WoodrowWilsonCenter (channel), April 5, 2019, YouTube video, 1:27:45, <https://youtube.com/watch?v=XLLcoTe5Olc&feature=share>; and Robert Jervis, “Perceiving and Coping with Threat,” in *Psychology and Deterrence*, Robert Jervis, Richard Ned Lebow, and Janice Gross Stein (Baltimore: Johns Hopkins University Press 1989), 33.

27. Thomas C. Schelling, “The Retarded Science of International Strategy,” in *Strategy of Conflict*, 13.

28. For example, see Robert M. Axelrod, *Evolution of Cooperation* (New York: Basic Books, 1984); Jervis, “Perceiving and Coping”; Dominic D. P. Johnson, *Strategic Instincts: The Adaptive Advantages of Cognitive Biases in International Politics* (Princeton, NJ: Princeton University Press, 2020); Herman Kahn, *World Economic Development: 1979 and Beyond* (Boulder, CO: Westview Press, 1979); Daniel Kahneman, Olivier Sibony, and Cass R. Sunstein, *Noise: A Flaw in Human Judgment* (Glasgow, UK: William Collins, 2021); and Daniel Kahneman, *Thinking, Fast and Slow* (London: Penguin, 2012).

could help improve assessments in deterrence, military strategy, and general conflict risk detection through improving how we analyze strategic behavior, with the aim to understand the other more accurately. It is important to recognize that while the abovementioned factors can all be analyzed, every analysis is subjectively probabilistic and should not be reduced to an equation.

Of equal importance is that, in such a model of the self and the other, it is unlikely that a higher volume of data would help with building a model or image that matches the perceptual situation as closely as possible—rather, the right contextual data is of value.<sup>29</sup> More data would likely give a more accurate representation of the objective situation but would not necessarily represent the situation perceived by the actors involved in the interaction. The model of the self and the other does not have to correspond to the objective reality—it is indeed highly likely that it does not. Step four, the feedback loop, would give information about whether the model of the self and the other are “correct” and would allow for learning and subsequent adjusting of the model.

## Conclusion

Reflexive control is a CAS approach to the interaction between perception, influence, and behavior. At its core, it aims to change the other’s perceptions about their utility sets: making (influence) the other misperceive what options they have (perception) and what their best choices are (behavior). The concept contains valuable elements that could give structure to the analysis of strategic behavior within a nonlinear, CAS approach. Such an approach is important to include, as linearity is often the approach of choice but not representative for how groups of people, and thus wars and conflicts, behave.

The application of reflexive control consists of four steps. The first three include analyses of ethical systems, long- and short-term goals, perceptions of the other, reflexivity, biases, noise, time lines for decision making, and weak spots for both actors (the self and the other), an analysis of the ways in which they could interact, and how this interaction could be changed to influence the outcome. This analysis could be seen as a subjective net assessment of the relationship between two (or more) actors. The fourth step, a feedback loop, enables learning and improvement of your understanding of what works and what does not.

Reflexive control offers the foundation of a structure we could develop to help us understand other actors and their perceived utility sets. It also

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29. For example, see Robert Jervis, *System Effects: Complexity in Political and Social Life* (Princeton, NJ: Princeton University Press, 1999), 253.

encourages us to examine our own utility sets and the ways in which we could be perceived, as well as our vulnerabilities and perceptions. Learning from reflexive control could help us improve the way we analyze strategic behavior and “do” strategy—the bridge between policy and tactics that decides “how.”

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